

CLAIMS

What is claimed is:

1. A power splitter comprising:
 - a) a substrate having a top layer, a bottom layer, and a plurality of inner layers;
 - b) a resistor formed on the top layer;
 - c) a capacitor formed between one of the inner layers;
 - d) a plurality of terminals located on the top layer;
 - e) a plurality of vias extending through the substrate, the vias electrically connecting the resistor, the capacitor and the terminals;
 - f) a first transformer attached to the bottom layer, the first transformer having a first winding, the first winding extending from the first transformer on the bottom layer to the terminals on the top surface, the first winding electrically connected to the terminals;
 - g) a second transformer attached to the bottom layer, the second transformer having a second winding, the second winding extending from the second transformer on the bottom layer to the terminals on the top surface, the second winding electrically connected to the terminals;
 - h) a case having a cavity, a top surface and a lead mounting surface, the cavity defining four walls and a bottom surface, the cavity being exposed in order to provide access to the cavity;
 - i) a plurality of leads secured to the lead mounting surface, the leads having a proximal end attached to the lead mounting surface and a distal end that extends outwardly

from the case and downwardly away from the lead mounting surface, each lead including a lead extension which is embedded in one of the walls in order to secure the lead to the case;

- j) the substrate mounted within the cavity such that the first and second transformers are attached to the bottom surface; and
 - k) a plurality of connector wires connected between the terminals and the leads.
2. The power splitter according to claim 1 wherein the substrate is formed from layers of low temperature co-fired ceramic.
 3. The power splitter according to claim 1 wherein the first transformer has a first binocular core and the second transformer has a second binocular core.
 4. The power splitter according to claim 1 wherein the transformers are attached to the bottom layer of the substrate using an adhesive.
 5. The power splitter according to claim 1 wherein the transformers are attached to the bottom surface of the case using an adhesive.
 6. The power splitter according to claim 1 wherein the windings are electrically connected to the terminals by a plurality of welds.

7. The power splitter according to claim 1 wherein the connector wires are electrically connected to the leads by a plurality of welds.
8. The power splitter according to claim 1 wherein the case is adapted to be grasped by an automated machine.
9. The power splitter according to claim 1 wherein the capacitor has a first electrode formed on one of the inner layers and a second electrode formed on another of the inner layers.

10. An electronic package for a power splitter comprising:
- a) a case having a cavity, a top surface and a lead mounting surface, the cavity defining four walls and a bottom surface, the cavity being exposed in order to provide access to the cavity;
 - b) a plurality of leads secured to the lead mounting surface on two of the walls, the leads having a proxil end attached to the lead mounting surface and a distal end that extends outwardly from the case and downwardly away from the lead mounting surface, each lead including a lead extension which is embedded in one of the walls in order to secure the lead to the case;
 - c) a multi layered substrate mounted within the cavity and surrounded by the walls, the substrate including a first end, a second end, a top surface, a bottom surface and a plurality of inner layers, a film resistor being formed on the top surface, a capacitor formed on the inner layers, a plurality of terminals located on the top surface and a plurality of vias extending through the substrate between the top surface and the bottom surface, the vias electrically connecting the resistor, the capacitor and the terminals;
 - d) a first transformer attached to the bottom surface of the substrate at the first end, the first transformer having a first winding, the first winding extending from the first transformer on the bottom surface to the terminals on the top surface, the first winding electrically connected to the terminals;
 - e) a second transformer attached to the bottom surface of the substrate at the second end, the second transformer having a second winding, the second winding extending from the second transformer on the bottom surface to the terminals on the

top surface, the second winding electrically connected to the terminals;

- f) the first and second transformers attached to the bottom surface of the case by an adhesive; and
- g) a plurality of connector wires connected between the terminals and the leads.

11. The power splitter according to claim 10 wherein the first transformer has a first binocular core having a first leg, a middle leg and a third leg and the second transformer has a second binocular core having a first leg, a second leg and a third leg.

12. The power splitter according to claim 11 wherein the first winding is wound on the middle leg.

13. The power splitter according to claim 11 wherein the second winding is wound on the middle leg.

14. The power splitter according to claim 11 wherein the second winding has four ends, two of the ends connected to the terminals and the other two ends connected to the leads.

15. The power splitter according to claim 10 wherein a portion of the transformers extend over the ends of the substrate.

16. The power splitter according to claim 10 wherein the transformers are attached to the bottom surface of the substrate using an adhesive.

17. The power splitter according to claim 10 wherein the cavity being openly exposed allows the power splitter to be cooled.

18. The power splitter according to claim 10 wherein the case is adapted to be grasped by an automated machine.

19. A method of manufacturing a power splitter package comprising the steps of:

- a) providing a low temperature co-fired ceramic substrate having a resistor, a capacitor and a plurality of terminals;
- b) providing a case having a cavity, a bottom surface and a plurality of leads extending from the case;
- c) dispensing a first adhesive on the bottom surface of the case;
- d) inserting a first and second transformer onto the first adhesive, the transformers having a plurality of windings;
- e) curing the first adhesive;
- f) dispensing a second adhesive onto the first and second transformers;
- g) placing the substrate onto the second adhesive;
- h) curing the second adhesive;
- i) wire welding the windings to the terminals; and
- j) attaching a plurality of connecting wires between the leads and the terminals.

20. The method according to claim 19 wherein the power splitter package is attached to a printed circuit board, further comprising the steps of:

- a) screening a solder paste onto the printed circuit board;
- b) placing the power splitter package such that a distal end of the leads contacts the printed circuit board; and
- c) reflowing the solder paste such that the power splitter package is attached to the printed circuit board.